Notes on Picking and Torque Tools for Pin Tumbler Locks

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4 May 2003

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The majority of commercially available picking tools for pin tumbler locks follow six or seven basic designs that have become *de facto* standards in the physical security and locksmithing industries. Various manufacturers, including A1, HPC, Majestic, and SouthOrd, among others, produce similar kits that typically contain a small and large hook, several rakes, a half diamond, a ball and a double ball. The production quality and materials vary somewhat (with different handles attached and grades of steel used), but the basic templates are almost identical.

With the possible exception of the small hook, I find most of these designs to be less than completely satisfactory. In particular, they are often too large to fit and manuever easily in more heavily warded or paracentric keyways, and the limited selection of hooks can make it difficult to raise individual pins over their full range. Worse, only a few torque tools are typically provided; these often do not fit well in common keyways, which can make it difficult to control precisely the rotation of the plug.

A few vendors, however, have departed from the "standard" designs, producing, in some cases, much more usable tools. While I do not, as a matter of policy, endorse specific products or manufacturers, the reader may find some of the designs and tools shown here to be easier to use or more versatile than the more commonly available picks with which he or she may be most familiar. While the biggest variable is the skill of the user (I'd put myself roughly in the middle of the skill range), I find that using the proper tools does make a significant difference.

In most of the photos below, a standard Majestic small hook is shown for reference. Note that the higher-resolution versions of the photos (click on an image) reveal much better detail than the thumbnails on this page. (I intend to reshoot some of these photos over a

proper measurement grid that will provide better information about tool dimensions; check back from time to time.)

Picking tools

LAB

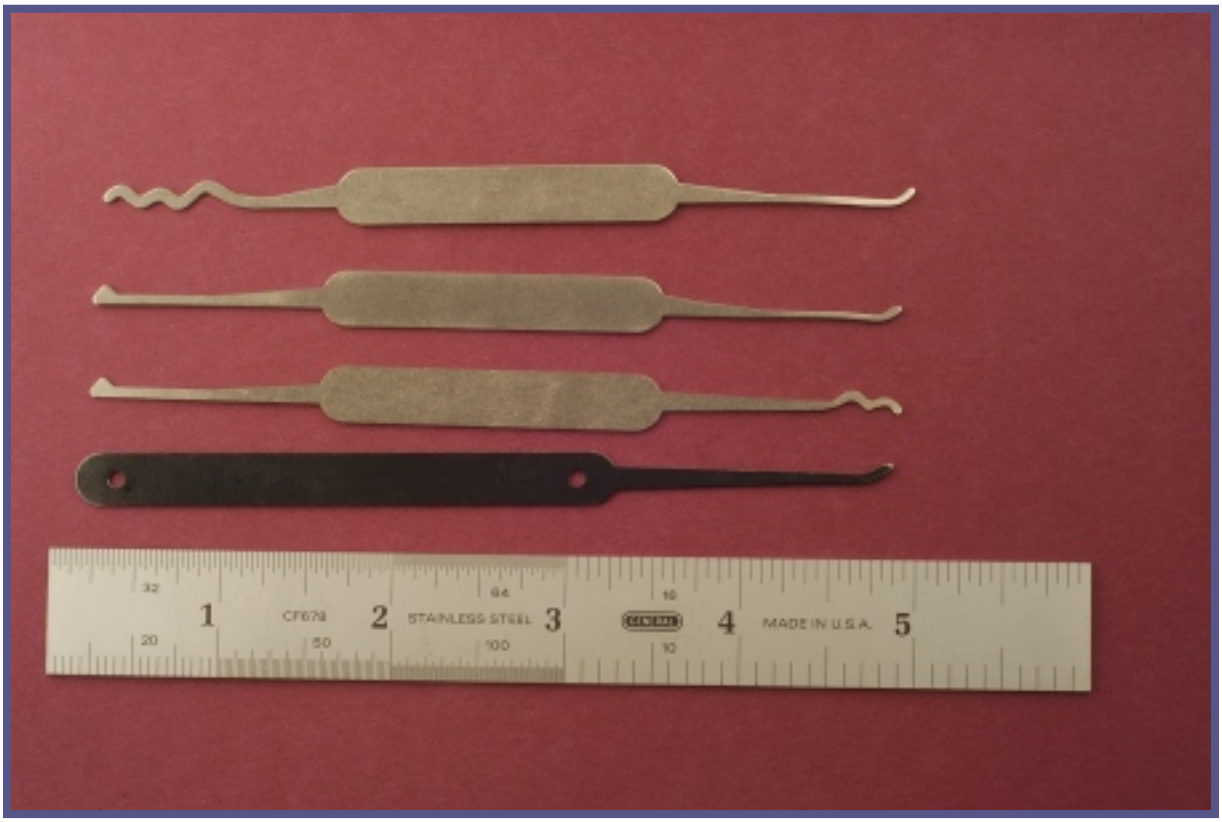

Figure 1. LAB picks (half diamond, rakes).

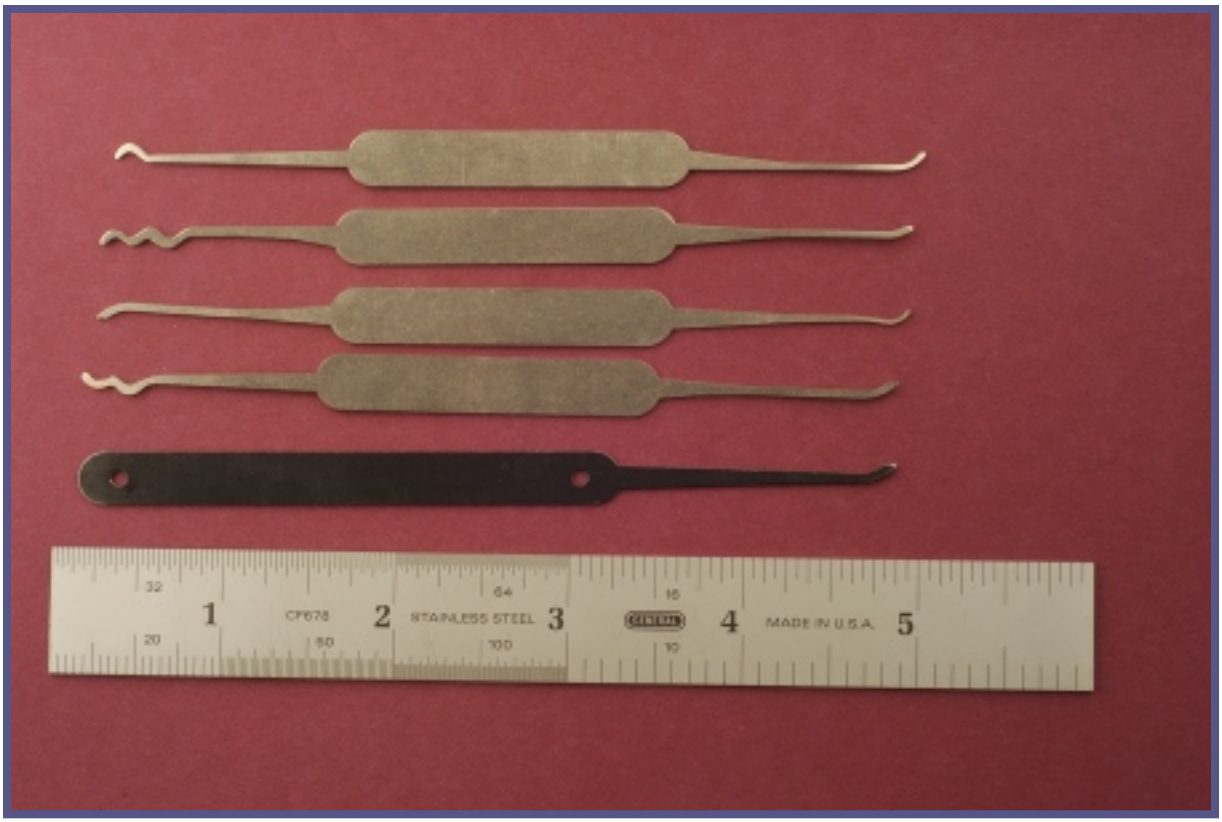

Figure 2. LAB picks (hooks, rakes).

LAB picks (Figures 1 and 2), originally designed by Gerry Finch, include a wide variety of hooks, virtually all of which are smaller than the standard "small hook" included in most sets from other makers (and shown for reference at the bottom of the photos). These picks are much easier to maneuver around heavily warded or paracentric keyways, and are among my favorites. They are made of a rather soft material and have a narrow tang, however, making them more easily bent than other picks. They are .025 inches thick.

Note that all of the picks are double ended and are not fitted with any special handle. I find their lack of a handle to be an advantage, giving better transmission of tactile feedback.

Rytan

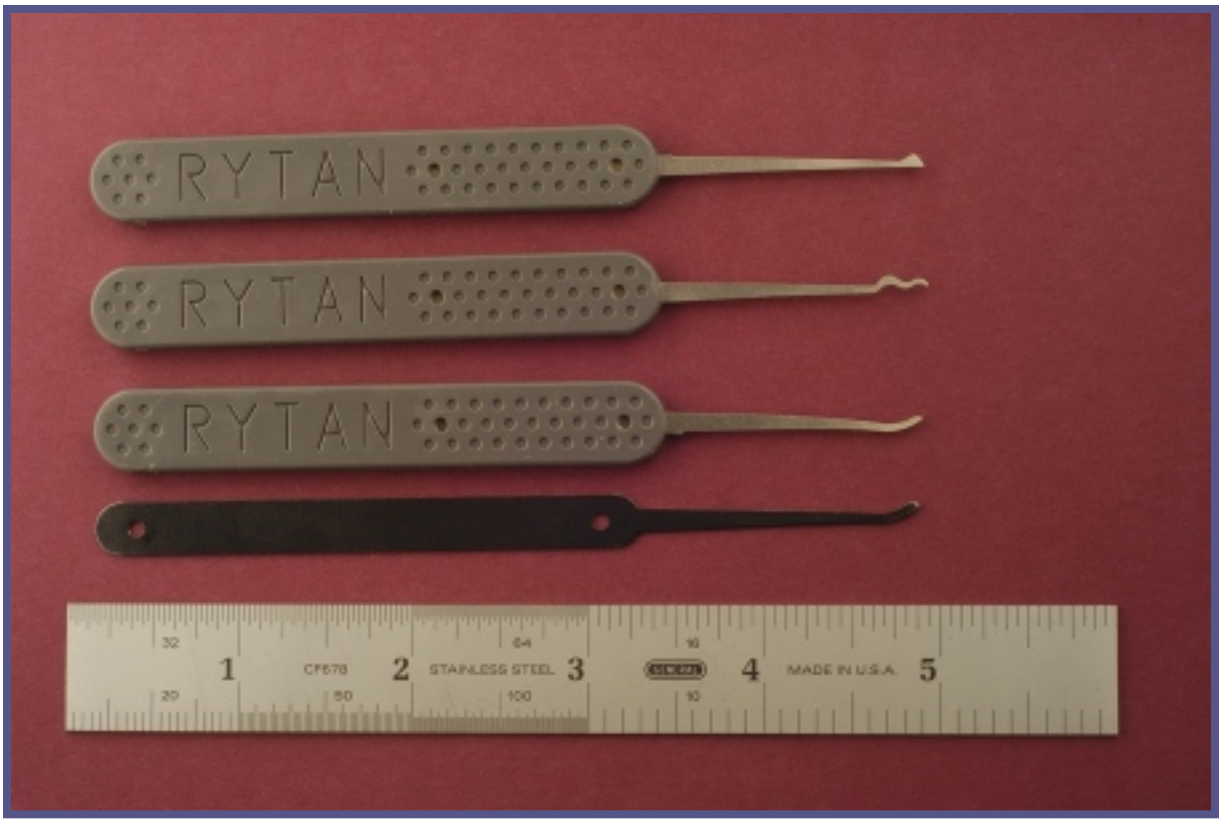

Figure 3. Rytan small picks (from bottom: hook, rake, half-diamond).

Rytan makes a small selection of "undersize" picks (Figure 3) that work well in many keyways. They have a tang .026 inches thick, and are equipped with oversize plastic handles.

Falle-Safe

Falle-Safe picks, designed and manufactured by John Falle of Jersey, Channel Islands (UK), are among the most unusual, and perhaps best designed, manual picking tools I've used. Most of the picks are double ended, have no special handles (although their middle section is somewhat oversize and provides a good gripping surface), and are made of a particularly strong coated .025 inch steel. Almost all of the designs are some variant of hook (there are also three "bumpy" rakes), reflecting Falle's belief that the ball, diamond, etc aren't really very useful in practice. These picks are rather expensive (a set costs about US $160) and are not widely available (the only US distributor of which I'm aware is MBA Associates). Falle also makes a line of specialized opening tools for various high security locks, many of which are available only to intelligence and law enforcement agencies.

Figure 4. Falle-Safe "deep curve" picks (from bottom: 1/2, 3/4, 5/6).

The most unusual picks in the Falle set are the "deep curves" (Figure 4), which are designed for relatively straight keyways without deep wards (including most wafer locks and some of the more open pin tumbler cylinders, such as Ilco's SX universal Schlage keyway). They pivot smoothly against the bottom of such locks, which gives precise control over pin lifting.

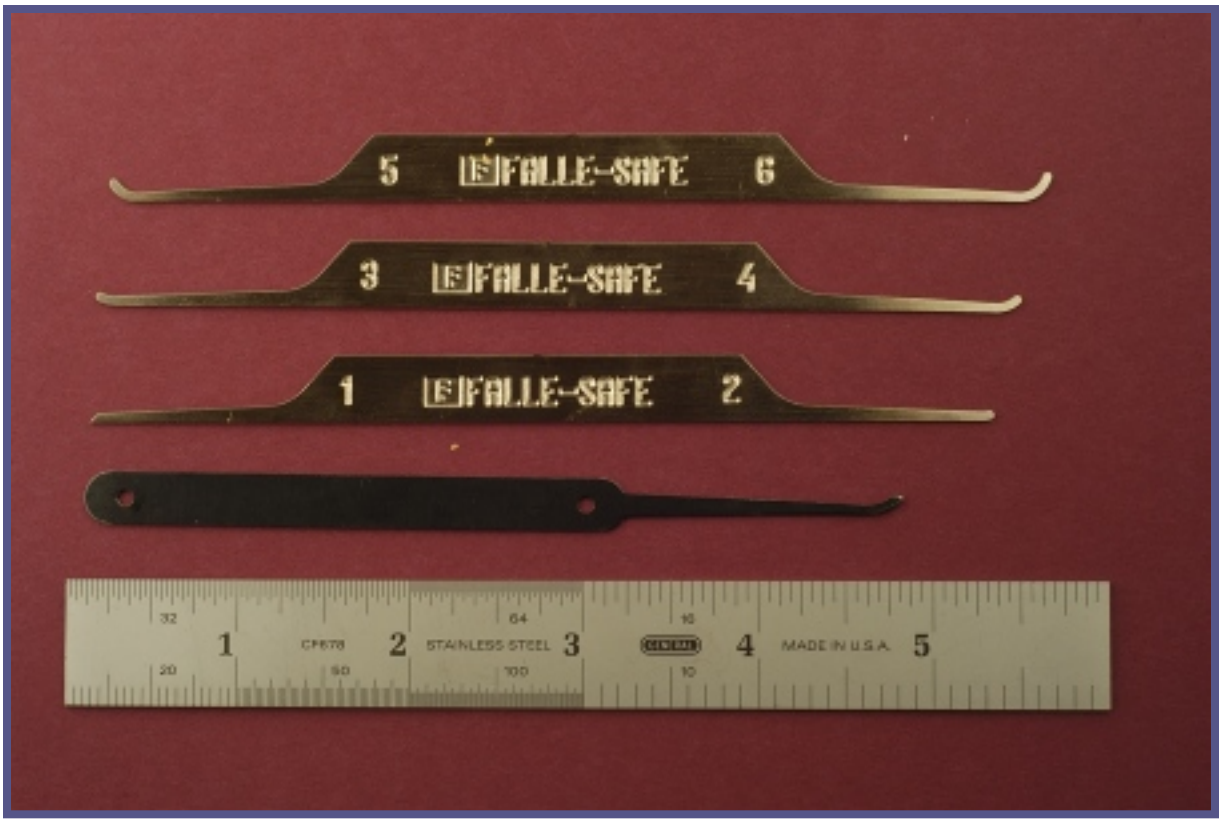

Figure 5. Falle-Safe "graduated curve" picks (from bottom: 1/2, 3/4, 5/6).

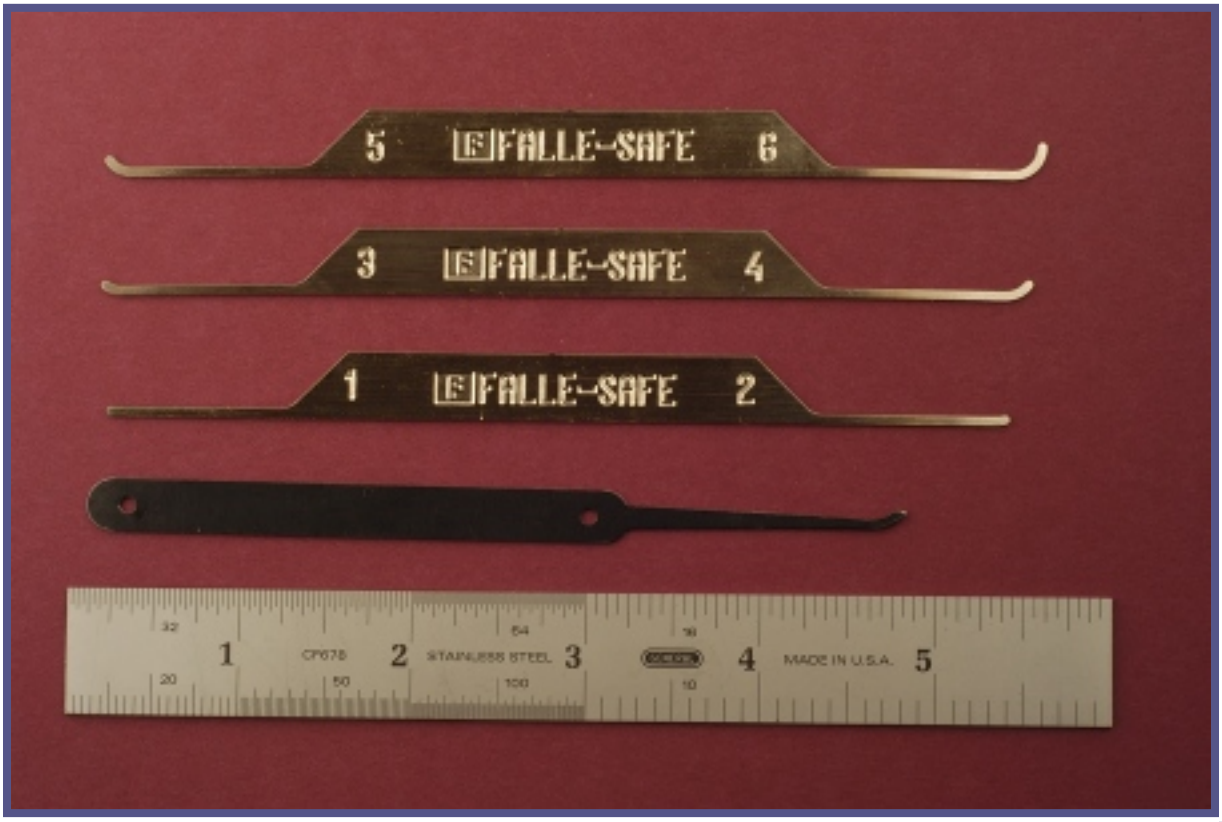

Figure 6. Falle-Safe "progressive curve" picks (from bottom: 1/2, 3/4, 5/6).

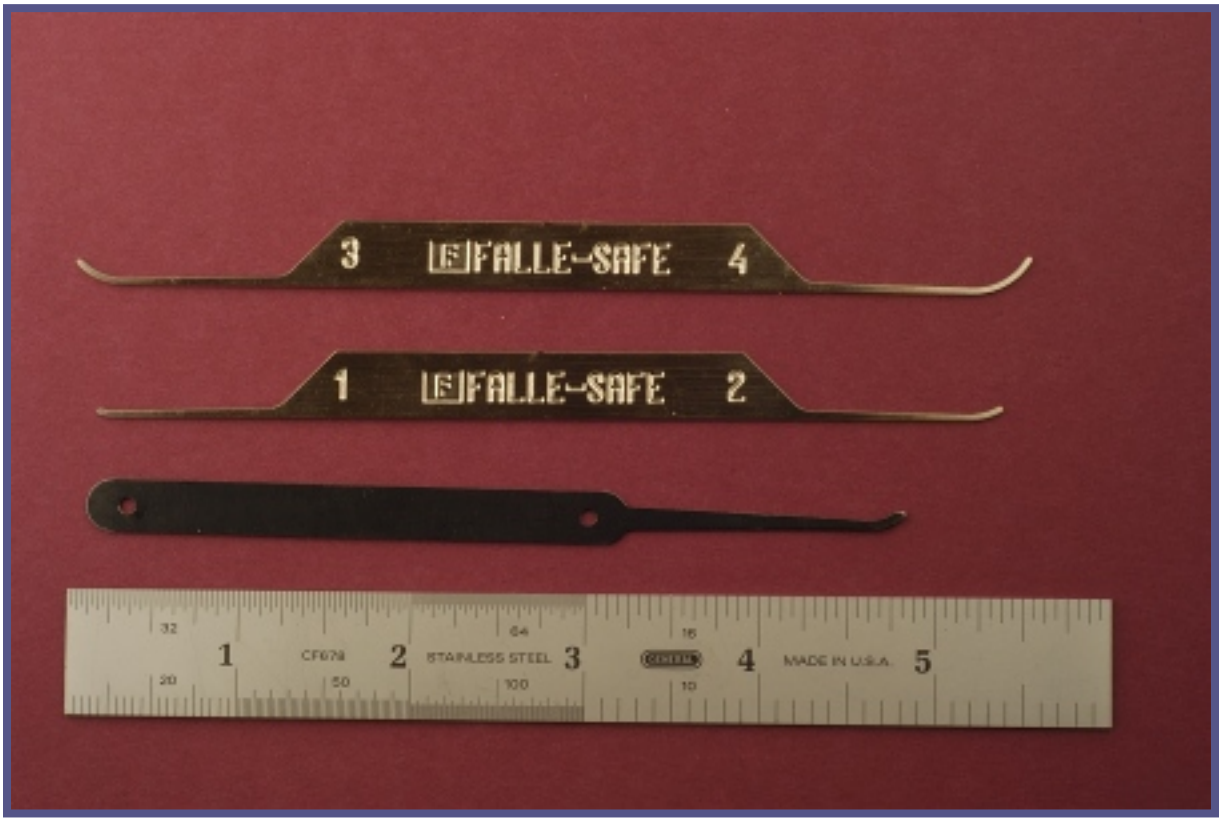

Figure 7. Falle-Safe "thin curve" picks (from bottom: 1/2, 3/4).

The Falle hook picks follow the familiar hook design but come in a wide range of sizes and tang widths. The "graduated curve" picks (Figure 5) have a tang width similar to the common Majestic picks but are produced with six different hook sizes. The #1 pick, which has no hook and a pointed end, is useful for counting and finding stuck pins and decoding wafer locks. The "progressive curve" picks are similar to the graduated curve picks but have a narrower tang. The "thin curve" picks, with four different sizes, have a very narrow tang (and are subject to bending under heavy handed picking); they are intended for the most heavily warded keyways.

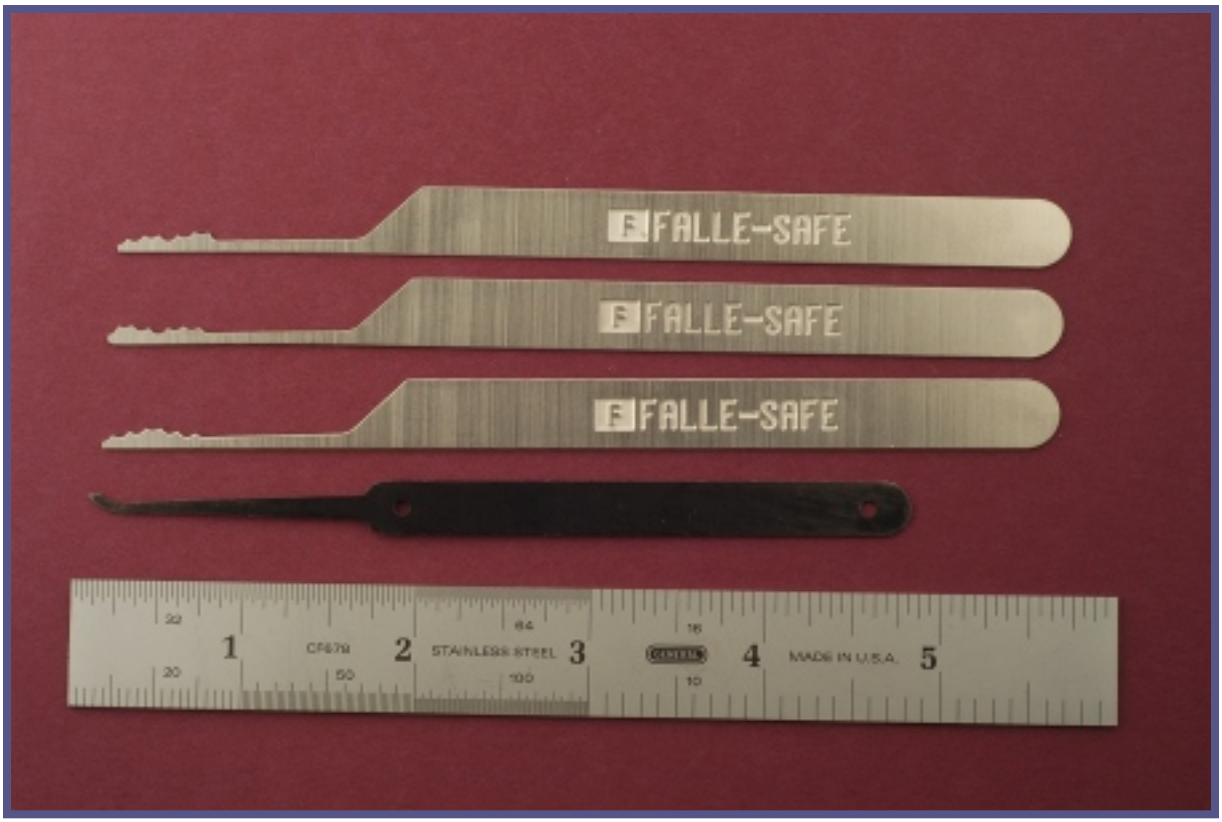

Figure 8. Falle-Safe "rake" picks.

Falle makes three single-ended rake picks with various profiles (Figure 8). They all incorporate acute "sawtooth" peaks, and require a bit of practice to use effectively.

Peterson

Peterson picks, designed and made by Ken Persson of Peterson International (best known for their variable key tubular pick), were introduced in 2002. They include several unusual and interesting designs. Most are .025 inches thick. They are relatively inexpensive (about US $2 each, depending on the handle) and would complement and fill in the gaps left by the smaller LAB picks well. Interestingly, Peterson does not include pre-made torque tools with their pick sets, instead including a bending tool and some strips of material for the user to make his or her own.

Figure 9. Peterson "hook" picks (from bottom: "Hook", "Gem", "Postal").

Peterson's hook picks include a standard hook (similar to the familiar Majestic small hook), a taller "Gem," which adds a half- diamond to the end of the hook, and a tall "Postal" hook intended primarily for letterbox locks (Figure 9). The Gem is also available in a "slender" model, which is .016 inches thick, for very narrow keyways.

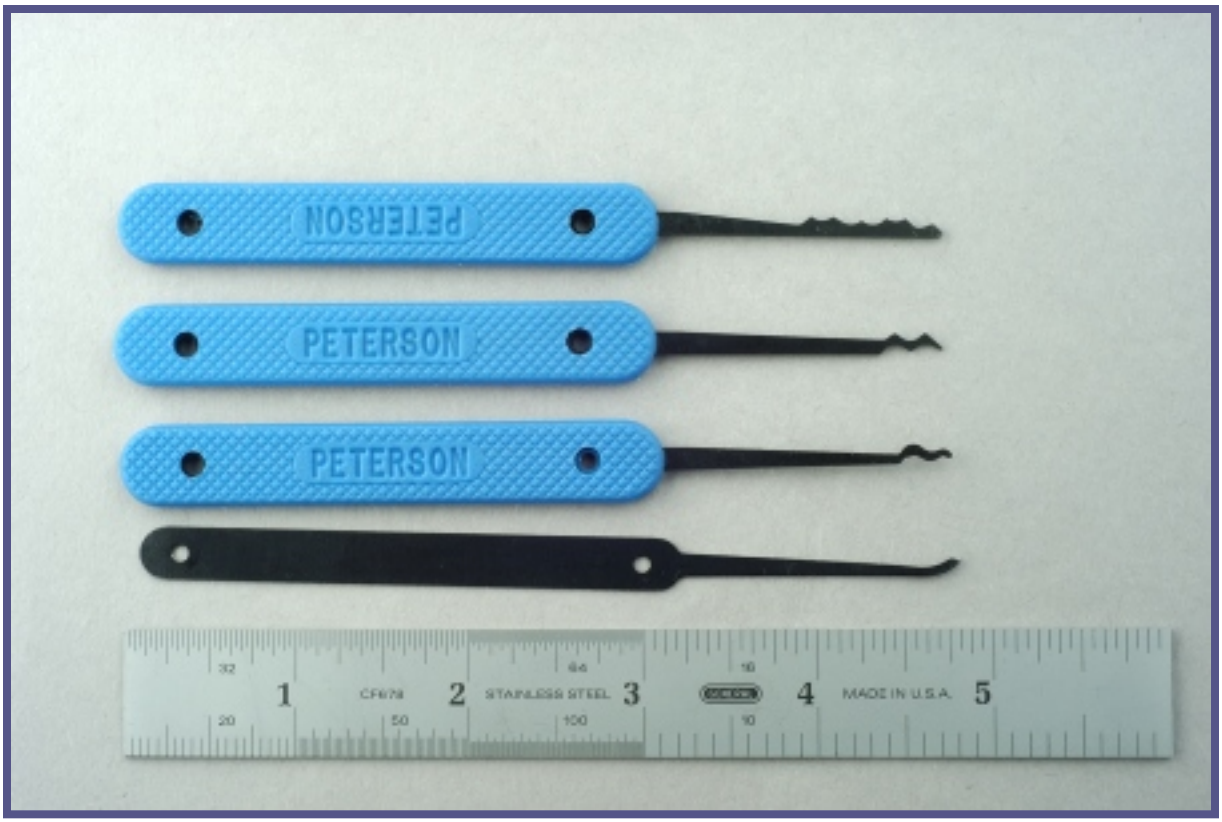

Figure 10. Peterson "rake" picks (from bottom: "Double", "Triple", "Ripple").

The Peterson rake picks (Figure 10) follow three popular standard rake designs.

Figure 11. Other Peterson picks (from bottom: "Reach", "Diamond", "Half Snowman").

Other Peterson picks (Figure 11) include a half-diamond, which is similar to the standard half diamond but has a slightly narrower tang, a "Half Snowman" which as best as I can tell might be acceptable as a kind of rake, and a deep curve "Reach". The Reach is the only commercially available deep curve of which I'm aware (other than those made by Falle), and is roughly similar to the Falle #4 deep curve.

Figure 12. Peterson pick handles (from bottom: "textured", "rubber", "plastic").

Most Peterson picks are available with a choice of three handles (Figure 12): textured foam, oversized hard rubber, or oversized plastic. The plastic handle seems to be best at transmitting tactile feedback, although I suspect I'd prefer no special handle with a larger grip end.

Torque Tools

Torque tools are often considered almost an afterthought that require little attention or precision, but I find the design and proper fit of the torque tool to be at least as important as that of the picking tool.

LAB

Figure 13. LAB torque tools.

LAB produces three double-ended torque tools (Figure 13; their designer, Gerry Finch, was careful to refer to them as "turning tools" and to avoid the common but mechanically inaccurate term "tension wrench"). The three different widths (.080, .092 and .122 inches) seem to be sufficient for most keyways, and the stiff material works well with the twisted handle. Note the "double twisted" end, which allows the application of torque from directly above or below the cylinder. Each is .033 inches thick.

Falle-Safe

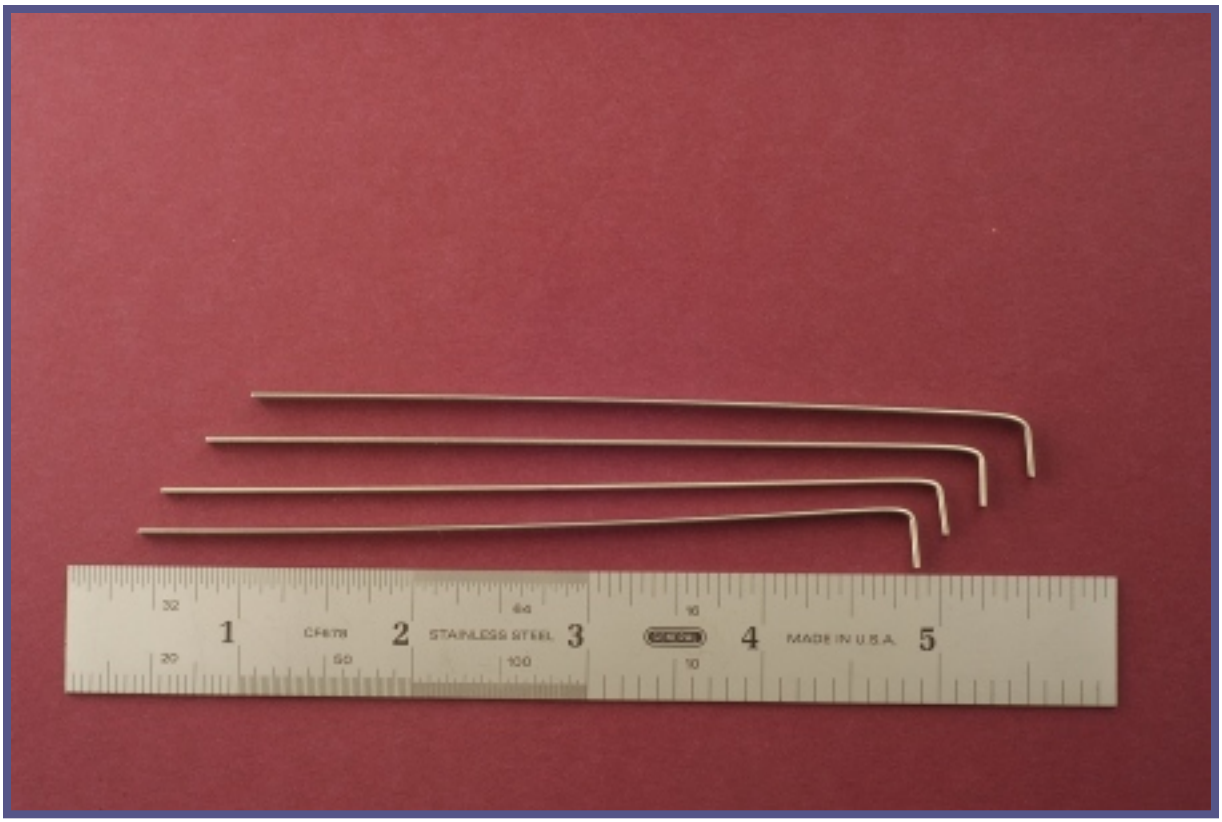

Figure 14. Falle-Safe conventional torque tools.

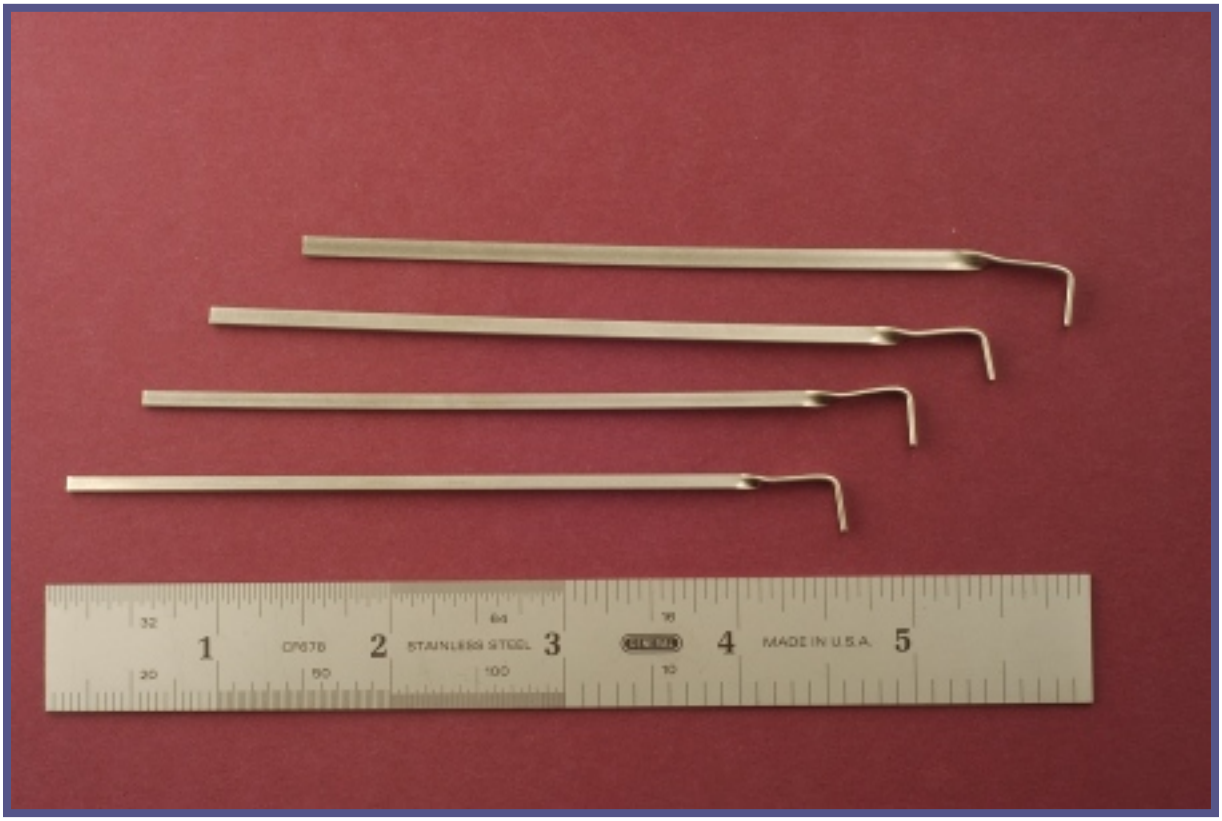

Figure 15. Falle-Safe conventional torque tools (twisted).

Falle-Safe makes eight different "conventional" bent torque tools. All are .030 inches thick and have widths of .090, .100, .110 or .120 inches. They are available with untwisted (Figure 14) and twisted (Figure 15) handles.

Figure 16. Falle-Safe torque tools (front; from bottom: 1, 2, 3).

Figure 17. Falle-Safe torque tools (back; from bottom: 1, 2, 3).

Figure 18. Falle-Safe torque tools (front; from bottom: 4, 5, 6).

Figure 19. Falle-Safe torque tools (back; from bottom: 4, 5, 6).

Perhaps the most unique feature of the Falle picks are the fitted two blade torque tools (Figures 16, 17, 18, and 19). A narrow blade fits the top of the keyway and a wider blade fits the bottom, maximizing room for the picking tool and providing very good control over the degree to which the plug is turned. (I can't imagine picking a spool or mushroom pin without them). The six different models vary the width of the top and bottom blades to provide a good fit into most (though not all) common keyways. (The design is different from other two pronged torque tools in that the blades sit horizontally across the top and bottom of the keyway rather than vertically). Note that both ends of the tools are fitted with the same size blades, but reverse which side is wide and which is narrow, allowing for torque to be applied from either above or below the cylinder.

Figure 20. Falle-Safe variable torque tools.

Four different variable torque tools (Figure 20) are intended for locks with shorter keyways into which the fixed width tools do not provide a good fit.

Others

Figure 21. Other torque tools (from bottom: LAB 2-prong, HPC Feather, HPC Variable, Tweezer).

A number of other 2-prong torque tools have been produced by various manufacturers, but none work especially well or provide the control of the Falle tools. The LAB 2-prong tool (Figure 21, bottom) is useful for holding open the covers of car locks. The "feather" tool (Figure 21, second from bottom) has a spring to control torque. While this does allow good control over the amount of torque applied, it also effectively eliminates almost all tactile feedback via the torque tool, making it of very limited value against the kinds of locks that might require such careful control.

Images taken with a Nikon D-100 digital camera with a 35mm lens under electronic flash (under a light tent).

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4 May 2003; revised 6 May 2003